REMARKS/ARGUMENTS

Claims 1, 9, 15 and 21 are amended. No claims are canceled or added. Thus, claims 1-24 remain pending. No new matter has been added. Reconsideration of the rejected claims is respectfully requested.

Rejection under 35 U.S.C. 102(e) and 103(a), Abramovici

Claims 1, 2, 5, 9, 12, 15, 17, 21, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Abramovici et al (US Pat. 6,966,020; hereinafter referred to as Abramovici). Claims 3, 4, 6-8, 11, 13, 14, 16, 18-20, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abramovici.

Claims 1-8, 21-24

Claim 1 is allowable as Abramovici does not teach or suggest each and every element of claim 1. For example, claim 1 recites:

> *receiving a plurality of failed test patterns, wherein a test pattern includes program bits that define how routing resources on the programmable integrated circuit are connected to form a test path, wherein a test pattern is designated as failing when a result from a test path is erroneous, wherein the result of the failed test path is created by applying one or more test values to the failed test path;*
>
> *identifying a subset of the routing resources that occur most frequently in the failed test paths; and*
>
> *generating new test patterns including program bits that define new test paths for testing the subset of the routing resources that occurred most frequently in the failed test paths, wherein at least one new test path includes:*
>
> *every routing resource of the subset under test; and*
>
> *at least one other resource that was not previously coupled with that routing resource in one of the failed test paths.*

In Abramovici, testing an FPGA 10 is accomplished by configuring resources within a self-testing area 16 to function as a test pattern generator (TPG) 20 and an output response analyzer (ORA) 22, and as groups of interconnect resources or wires under test (WUTs) 24. *See Abramovici*, FIG. 3 and col. 6 lines 9-14. "When the fault status data indicates the detection of a fault in one of the testing regions 19 in the self-testing area 16," resources are reconfigured for further testing in order to minimize a region of the group of WUTs 32 of region 19 that tested faulty. *Id.*, col. 7 lines 8-22. Thus, only one fault or failed test pattern is received

before further testing is performed. Accordingly, Abramovici does not teach or suggest "*receiving a plurality of failed test patterns*" and then " *generating new test patterns*," as recited in claim 1.

Additionally, after a fault status is received, a faulty WUT 32 is analyzed further by subdividing it into two subsequent groups 32a and 32b or regions of groups. *Id.,* FIGS. 6-8 and col. 7 lines 28-31. These are simple bisections or separations of WUT 32. The sum of these subsequent groups 32a and 32b, or any other subregions, is equal to the group 32. Thus, no new resources are included within any new test paths. Accordingly, within a subsequent group 32a or 32b there is not a resource "*that was not previously coupled with that routing resource in one of the failed test paths*," as recited in claim 1.

Once a minimized subsequent group 32a is found, the resources are again reconfigured in order to identify a wire $32a_1$, $32a_2$, . . . $32a_n$ that includes the faulty interconnect resource. *Id.*, col. 8 lines 8-14. The wires $32a_1$-$32a_n$ are separated and grouped with additional known fault-free resources to form respective new subsequent groups 35a-35n, thus identifying the faulty wire. *Id.*, col. 8 lines 14-27. Similarly, once the faulty wire has been found, additional known fault-free resources are combined with the resources in the faulty region 38 in order to circumvent or re-route around one suspect resource at a time. *Id.*, FIG. 10 and col. 8 line 60 to col. 9 line 9. Thus, when additional fault free resources are used to re-route around that particular resource, then that routing resource is not included in the new test path. In contrast, claim 1 recites that the new test path includes *"every routing resource of the subset under test*."

Accordingly, Abramovici does not teach or suggest at least one new test path including "*every routing resource of the subset under test; and at least one other resource that was not previously coupled with that routing resource in one of the failed test paths*." Exemplary support of which is provided by Figure 2B and paragraphs 33 and 34.

For at least these reasons, claim 1 is allowable over Abramovici. As claim 1 is allowable, claims 2-8 and 21-24 which depend therefrom are also allowable for at least the same rationale.

Claims 9-20

Applicants submit that independent claims 9 and 15 should be allowable for reasons mentioned with respect to claim 1. As claim 9 is allowable, dependent claims 10-14 are allowable for at least the same rationale. As claim 15 is allowable, dependent claims 16-20 are allowable for at least the same rationale.

Claim 23

In addition to being allowable for the same rationale as claim 1, claim 23 is allowable for additional reasons. For example, claim 23 recites

> *scanning in a first value to a failed resource;*
> *scanning in a second value to a data control point coupled with the failed resource;*
> *scanning out the value stored in the failed resource and comparing that value to the first value;*
> *transmitting a clock signal from the clock control point to the failed resource; and*
> *scanning out the value stored in the failed resource and comparing that value to the second value.*

In Abramovici, a first output of a test pattern propagated along a first WUT 32 is compared to a second output of the test pattern that is propagated along other WUTs 34 and 35. *Id.*, col. 6 lines 59-64. Thus, a resource is tested by comparing outputs of two different resources. In contrast, claim 23 recites comparing an output of the failed resource to a value scanned into the failed resource and comparing an output of the failed resource to a value stored as a result of transmitting a clock signal. For at least this additional reason, claim 23 is allowable over Abramovici.

Claim 24

In addition to being allowable for the same rationale as claim 1, claim 24 is allowable for additional reasons. For example, claim 24 is allowable for comparing an output of the failed resource to a value scanned into the failed resource as desecribed above for claim 23. Also, Abramovici's comparing outputs from different groups of resources does not teach or suggest

> *transmitting a clear signal from the clear control point to the failed resource; and*

scanning out the value stored in the failed resource and comparing that value to a clear value.

Abramovici does not mention a clear signal or a clear value, nor does it mention comparing anything but test patterns propagated along and output from two different groups of resources. For at least these additional reasons, claim 24 is allowable over Abramovici.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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